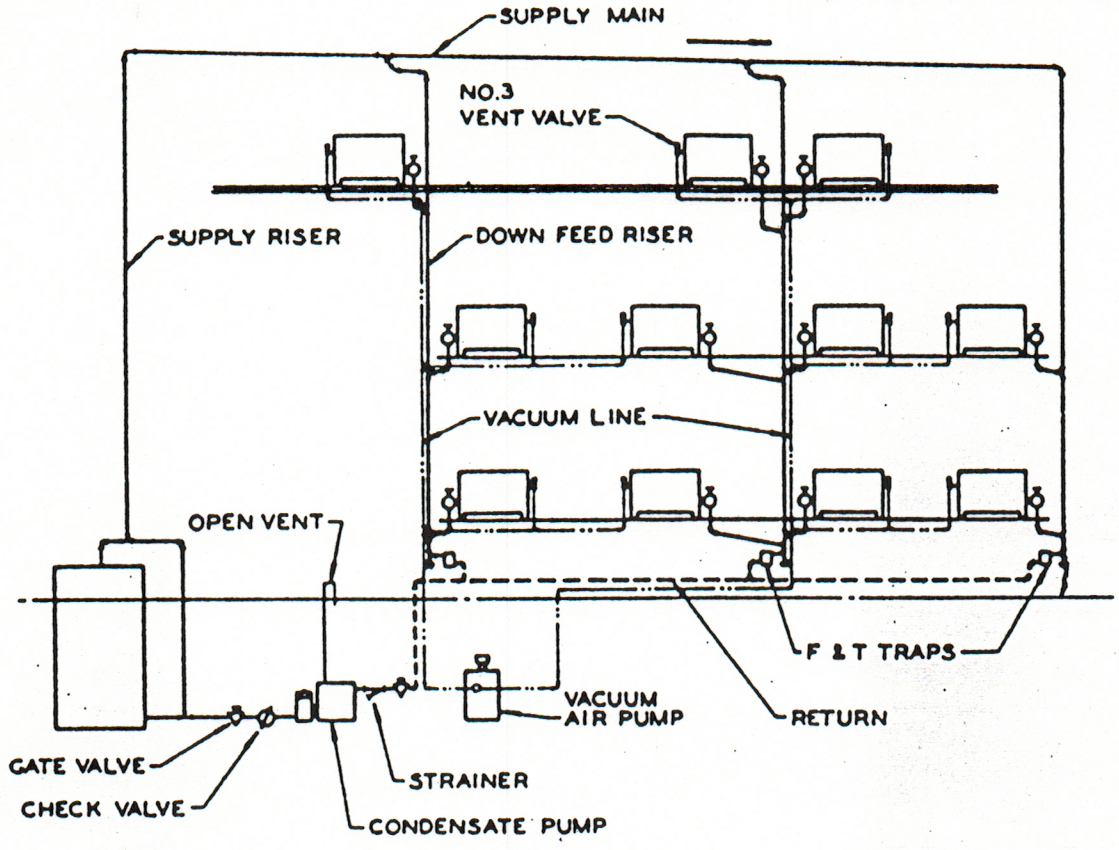

ONE-PIPE AIR LINE PAUL SYSTEM Fig. 23

Fig. 23 illustrates the piping arrangement and the equipment used for a down-feed one-pipe Paul System. This system can be designed for either an up-feed or down-feed system having gravity return of condensate to the boiler, or the condensate can be returned to the boiler using a condensate pump as shown. The important difference of the Paul System from that of an ordinary one-pipe system is the elimination of air from each radiator using vacuum created by a motor-operated air-line pump, or by using either a steam- or water-operated air exhauster using a jet principle for creating a vacuum by removing air.

Each radiator is equipped with an air-line valve installed on the end of the radiator, or other type heating unit, opposite the radiator supply valve. The air from the radiators is discharged through the air-line valve into a separate piping system, maintained under vacuum for the fast removal of air. This air-line piping does not carry the condensate from the radiator.

When the system is operating, the air line valve remains open for the removal of air from the radiation due to the vacuum in the air-line piping. This results in fast circulation of steam to each radiator. When steam reaches the air-line valve, it closes. It continues to remain closed until air accumulations cause it to cool sufficiently to open again so air can be removed and steam can fill the space it occupied.